

What is claimed is:

1. A method for controlling electrical conductivity of a work piece by emitting pulse light from a light source onto the work piece, the method comprising a step of:

controlling the light emission index  $S$  of the pulse light in a  $400 \leq S \leq 900$  range, wherein light energy, pulse width and light emission index are represented by  $E$  J/cm<sup>2</sup>,  $\tau$  sec, and  $S$ , and the  $S$  is defined as  $E/\tau^{1/2}$ .

2. The method according to claim 1, wherein the light emission index is controlled in a  $500 \leq S \leq 900$  range.

3. The method according to claim 1, wherein the light source is a flash lamp.

4. The method according to claim 1, wherein the work piece is made of amorphous silicon or poly-crystal silicon.

5. The method according to claim 1, wherein the work piece is made of amorphous silicon and poly-crystal silicon.

6. A semiconductor made by the method according to claim 1.

7. The semiconductor according to claim 6, wherein the

semiconductor is made of amorphous silicon.

8. The semiconductor according to claim 6, wherein the semiconductor is made of poly-crystal silicon.

9. The semiconductor according to claim 6, the semiconductor is made of amorphous silicon and poly-crystal silicon.

10. An electrical conductivity controlling device comprising a circuit in which light emission index  $S$  of pulse light is controlled in a  $400 \leq S \leq 900$  range, wherein light energy, pulse width and light emission index are represented by  $E$  J/cm<sup>2</sup>,  $\tau$  sec, and  $S$ , and the  $S$  is defined as  $E/\tau^{1/2}$ .

11. The electrical conductivity device according to claim 10, wherein the light emission index is controlled in a  $500 \leq S \leq 900$  range.

12. The electrical conductivity controlling device according to claim 10, wherein the light source is a flash lamp.

13. The electrical conductivity controlling device according to claim 10, wherein the work piece is made of amorphous silicon or poly-crystal silicon.

14. The electrical conductivity controlling device according to claim 10, wherein the work piece is made of amorphous silicon and poly-crystal silicon.